IN THE CLAIMS:

1. (Currently Amended) An optical communication system, comprising: ~~article comprising an all-pass optical filter including~~

a signal source configured to provide an input optical pulse train having a regular repetition rate; and

an all-pass optical filter optically coupled to the signal source and configured to receive the input optical pulse train, wherein the all-pass optical filter has only a single feedback path that is configured to apply a time delay spectrum to the input optical pulse train, and a free spectral range of the all-pass optical filter is matched to the regular repetition rate of the input optical pulse train to produce an output optical pulse train delayed in time relative to the input optical pulse train.

~~an input port configured to receive the input optical pulse having a regular repetition rate;~~

~~and a single feedback path, wherein the all-pass optical filter is configured to provide a phase response relative to a desired phase response and apply a plurality of frequency-dependent time delay periods to the input optical pulse to define a time delay spectrum having a plurality of delay peaks, and a free spectral range of the filter, as defined by the a spacing between the delay peaks, is matched to the regular repetition rate of the input optical pulse.~~

2. (Currently Amended) The ~~article~~ system of claim 1 in which the ~~all-pass optical filter employs a~~ single feedback path ~~comprising~~ comprises a ring resonator and a heating element for heating a section of the ring resonator.

3. (Currently Amended) The ~~article~~ system of claim 1 in which the all-pass optical filter is arranged in parallel with a Mach-Zehnder interferometer.

4. (Currently Amended) The ~~article~~ system of claim 1 in which the free-spectral range of the all-pass optical filter is matched to the regular repetition rate of the input optical pulse train by the free-spectral range being substantially equal to the regular repetition rate.

5. (Currently Amended) The system of claim 4, further including ~~An assembly for use in an optical communication system comprising~~ an optical multiplexer/demultiplexer device ~~including the article of claim 4.~~ , wherein the all-pass optical filter is used to synchronize control signals with signals input to the optical multiplexer/demultiplexer device.

6. (Currently Amended) The ~~article~~ system of claim 1, ~~in which~~ wherein the time delay spectrum has a plurality of time delay peaks, and the free-spectral range of the all-pass optical filter is matched to the regular repetition rate of the input optical pulse train by the free-spectral range being offset from the regular repetition rate by a sufficiently small degree that each frequency of the input optical pulse train falls within a bandwidth of one of the plurality of time delay peaks.

7. (Currently Amended) ~~An assembly for use in an optical communication system comprising a pulsed laser and the article of claim 6, in which~~ The system of claim 6, wherein the signal source comprises a pulsed laser, and the all-pass optical filter ~~corrects~~ is configured to reduce linear chirp of the pulsed laser.

8. (Canceled)

9. (Canceled)

10. (Canceled)

11. (Currently Amended) A method of operating an all-pass optical filter, comprising:

providing an all-pass optical filter with an input and only a single feedback path;

providing an optical pulse train having a regular repetition rate to the input; and

matching a free spectral range of the all-pass optical filter to the regular repetition rate of the optical pulse train.

~~generating a tunable delay for an optical signal with use of an all-pass optical filter having a single feedback path wherein a pulse train of the optical signal has a regular repetition rate, the method comprising matching a spacing between frequency-dependent time delay peaks generated by the all-pass optical filter to the repetition rate of the pulse train.~~

12. (Currently Amended) The method of claim 11, in which the free-spectral range of the filter is matched to the regular repetition rate of the optical pulse train by the free-spectral range being substantially equal to the regular repetition rate.

13. (Currently Amended) The method of claim 11, wherein the time delay spectrum has a plurality of time delay peaks, and the ~~in which the a~~ free-spectral range of the filter is matched to the repetition rate of the optical pulse train by the free-spectral range being offset from the regular repetition rate by a sufficiently small degree that each frequency of the optical pulse train falls within a bandwidth of one of the plurality of time delay peaks.

14. (Canceled)

15. (Canceled)